

CLAIMS

1. Device for preparing a beverage from a food
substance, such as a substance to be extracted
5 and/or dissolved, contained in a capsule, the said
device comprising a housing for receiving the
capsule, at least one piercing and injection
element having a channel for receiving a liquid
under pressure, the said piercing and injection
10 element being designed to project into the said
housing and pierce a face of the capsule in at
least one position of operation of the device so as
to allow a liquid to be introduced into the said
capsule from the said channel, the said device
15 being characterized in that the piercing and
injection element has a distal end arranged in the
form of a valve having a closure means with an end,
the said valve being designed to close off the said
channel in a first position, called the rest
20 position, and to open under the effect of the
pressure from the liquid against an elastic element
so as to free a passage as a function of the
pressure and thus create a layer of liquid sprayed
through the said passage in a second position,
25 called the work position.
2. Device according to Claim 1, characterized in that
the piercing and injection element is placed
substantially at the centre of the capsule housing
30 and is designed to produce a multidirectional
divergent spray in the form of at least one layer
of liquid.
3. Device according to Claim 1 or 2, characterized in
35 that the thin layer extends continuously around the
periphery of the pointed part and sprays the
substance contained in the capsule in a
substantially circular manner.

4. Device according to one of Claims 1 to 3,
characterized in that the piercing and injection
element comprises a tubular body defining the said
channel, in that the tubular body comprises a
5 proximal orifice for connection to a liquid intake
and a distal orifice defining the said passage with
the said pointed part, the distal orifice and the
proximal orifice being linked by the said channel,
and in that the said closure means has a rear guide
10 part that slides in the said tubular body.
5. Device according to one of the preceding claims,
characterized in that the pointed end comprises an
external peripheral surface lying in the extension
15 of the external peripheral surface of the said
tubular body.
6. Device according to Claim 5, characterized in that
the said closure means comprises, behind its
20 pointed end, a shoulder surface that may bear
against an end annular surface of the said tubular
body and in that the said rear guide part comprises
openings allowing a liquid to flow from the
proximal orifice to the said shoulder surface and
25 through the said passage in the work position.
7. Device according to one of Claims 6, characterized
in that the shoulder surface of the closure means
is held against the said annular surface by the
30 said elastic element in the absence of pressure
from the liquid, the channel then being sealed
closed.
8. Device according to one of Claims 6, characterized
35 in that the elastic element comprises a helical
spring lying in the said channel and in that the
said spring is fastened to the said rear guide part
of the closure means by a first end and to a hook
element integral with the tubular body by a second

end.

9. Device according to any one of the preceding claims, characterized in that the liquid layer has
5 a thickness of less than or equal to 0.5 mm, preferably less than 0.3 mm.
10. Device for preparing a beverage from a food substance, such as a substance to be extracted
10 and/or dissolved, contained in a capsule, the said device comprising a housing for receiving the capsule, at least one piercing and injection element having a channel for receiving a liquid under pressure, the said piercing and injection
15 element being designed to project into the said housing and pierce a face of the capsule in at least one position of operation of the device so as to allow a liquid to be introduced into the said capsule from the said channel, the said device
20 being characterized in that the piercing and injection element has at least one slot that is transverse to the said piercing and injection element, the said slot being arranged so as to inject the liquid into the capsule in the form of
25 at least one thin layer extending in a continuous, divergent and multidirectional manner, covering a spray surface in an arc of a circle inside the capsule.
- 30 11. Device according to Claim 10, characterized in that the said slot extends over an angular sector of between 30 and 180 degrees.
12. Device according to Claim 11, characterized in that
35 the piercing and injection element also comprises a second transverse slot.
13. Device according to Claim 12, characterized in that the said second slot is placed at a different level

to the first slot along the said piercing and injection element.

14. Device according to Claim 13, characterized in that
5 the said second slot covers an angular sector that is complementary to that of the first slot so that together they cover a sector of 360 degrees.
15. Method of wetting and/or dissolving a substance
10 contained in a capsule for producing a beverage consisting, by means of a piercing and injection element, in piercing the capsule and injecting a liquid under pressure into the capsule to wet and/or dissolve the substance,
15 characterized in that:
the said piercing and injection element is arranged so as to inject the liquid into the capsule in the form of at least one thin layer extending in a continuous, divergent and multidirectional manner,
20 covering a spray surface in an arc of a circle inside the capsule.
16. Method according to Claim 15, characterized in that
25 the thin layer covers a spray surface of between 30 and 360 degrees inside the capsule.
17. Method according to Claim 16, characterized in that
30 the thin layer covers a spray surface of between 120 and 360 degrees inside the capsule.
18. Method according to Claims 15, 16 or 17,
characterized in that the thin layer has a thickness of less than or equal to 0.5 mm, preferably less than 0.3 mm.
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19. Method according to one of Claims 15 to 18, characterized in that the slot is fixed.
20. Method according to one of Claims 15 to 19,

characterized in that the slot is opened only in response to the injection of fluid under pressure into the injection and piercing element.